UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/318,445	05/25/1999	SEIJI MIYOSHI	FUJA-16.140	1428

7590 11/06/2002

HELFGOTT & KARAS P C
575 MADISON AVENUE
26TH FLOOR
NEW YORK, NY 10022-8508

EXAMINER	
KUMAR, PANKAJ	

ART UNIT	PAPER NUMBER
2631	5

DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/318,445	MIYOSHI ET AL.	
	Examiner	Art Unit	
	Pankaj Kumar	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-32 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-7,10-13,15-18 and 20-32 is/are rejected.

7)☒ Claim(s) 8,9,14 and 19 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 5, 11, 21, 22, 25, 26, 27, 28, 30, 31 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. As per claims 5 and 11, they say "a timing signal generating unit for generating said timing signal synchronized with said transmission system which interferes said central office and said remote terminal" Either the underlined portion should be 'which interfaces' or 'interferes with'.

4. Regarding claims 21, 25, 30 and 31, the phrase "i.e." (equivalent to 'for example') renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

5. Since claim 21 is rejected, claim 22 is also rejected.

6. Since claim 25 is rejected, claims 26, 27 and 28 are also rejected.

7. Since claim 30 is rejected, claim 32 is also rejected.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

9. Claims 1, 3 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Awata et al. USPN 5375147

10. As per claim 1, Awata teaches a digital subscriber line communicating system (Awata col. 1 line 14) for communicating between a transmitting side and a receiving side through a communication line, comprising: a sliding window generating unit for generating a sliding window (Awata fig. 6: 611) based on a timing signal (Awata fig. 6: 607) representing a periodical noise duration (Awata fig. 6 "jitter"; col. 2 lines 53-58); and a sliding window transmitting unit (Awata fig. 6: 612) for transmitting modulated symbol according to said sliding window through said communication line to said receiving side (Awata col. 8 lines 14-15: " ... an echo canceler 606 for removing from the output signal an echo from the sending side ... ").

11. As per claim 3, Awata teaches the digital subscriber line communicating system according to claim 1, wherein both said sliding window generating unit and said sliding window transmitting unit are located in said transmitting side (Awata fig. 6: 611, 612).

12. As per claim 23, Awata teaches a transceiver in a central office connected through a communication line to a remote terminal, said transceiver comprising: a timing signal generating unit for generating said timing signal representing a periodical noise duration; a sliding window generating unit, operatively connected to said timing signal generating unit, for generating a downstream sliding window indicating the phase of noise condition of said remote terminal; and a sliding window transmitting unit for transmitting modulated symbols according to said downstream sliding window through said communication line to said remote terminal (discussed above with Awata)

13. Claims 1, 2, 4, 5, 6, 7, 10, 11, 12, 13, 15, 23, 24, 25, 26, 28, 29, 30, 31, 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Long USPN 5991311.

14. As per claim 1, Long teaches a digital subscriber line communicating system for communicating between a transmitting side and a receiving side through a communication line (Long fig. 10: 30), comprising: a sliding window (Long fig. 13: 128 "phase offset") generating unit for generating a sliding window based on a timing signal (Long fig. 13: network clock) representing a periodical noise duration; and a sliding window transmitting unit (Long fig. 13: 128 also transmits) for transmitting modulated (Long fig. 10: 36: TCM – time compression modulation) symbol according to said sliding window through said communication line to said receiving side.

15. As per claim 2, Long teaches the digital subscriber line communicating system according to claim 1, wherein said periodical noise duration is caused with a cross-talk noise on said communication line from an another transmission system (Long: title) using time compression modulation (Long fig. 10: 36: TCM – time compression modulation).

16. As per claim 4, Long teaches the digital subscriber line communicating system according to claim 1, wherein said sliding window is generated in such a way that inside modulated symbol of said sliding window is received by said receiving side when said receiving side is in a far end cross-talk duration (Long fig. 3: 28 FEXT – Far End cross Talk).

17. As per claim 5, Long teaches the digital subscriber line communicating system according to claim 1, wherein said transmission side is a central office (Long fig. 6: 8) and said receiving side is a remote terminal (inherent); said central office comprising: a timing signal generating unit for generating said timing signal (Long fig. 6: 40 CLK) synchronized with said transmission system (inherent) which interferes said central office and said remote terminal (rejected with 112); said sliding window generating unit being operatively connected to said timing signal generating unit (Long fig. 13: 128 connected to network clock via other components), and said sliding window being a downstream sliding window indicating the phase of noise condition of said remote terminal (Long fig. 13: 124 'phase compare'); and said sliding window transmitting unit transmitting modulated symbols according to said downstream sliding window through said communication line to said remote terminal (Long fig. 13: DSL Burst Clock); and said remote terminal comprising: a sliding window receiving unit (Long fig. 13: 122; fig. 9: both transmitting and receiving sides 6 and 8 have modems 48 and 47; thus fig 13 applies to both the transmitting side and the receiving side) for receiving modulated symbols according to said downstream sliding window from said central office; said downstream sliding window indicating cross-talk durations due to said TCM ISDN transmission at the remote terminal (Long: title).

18. As per claim 6, Long teaches the digital subscriber line communicating system according to claim 5, wherein said downstream sliding window is generated in such a way that inside

symbol of said downstream sliding window is received by said remote terminal in a first cross-talk duration determined with a far end cross-talk duration at said remote terminal (Long fig. 13: symbol will be received whether in first or nth crosstalk duration).

19. As per claim 7, Long teaches the digital subscriber line communicating system according to claim 5, wherein said first cross talk duration is within a prior half of each cycle of said timing signal (Long fig. 3: 28), and a second cross-talk determined with a near end cross-talk duration at the remote terminal, is within a latter half of each cycle of said timing signal (Long fig. 3: 22), inside of said downstream sliding window being formed within said first cross-talk duration (Long fig. 13: 128 is operating while 122 is operating; it is not that 128 only operates once 122 is finished.).

20. As per claim 10, Long teaches the digital subscriber line communicating system according to claim 5, wherein said central office includes a transceiver comprising said timing signal generating unit (Long fig. 6: 40 CLK) and said sliding window generating unit (Long fig. 13: 128).

21. As per claim 11, Long teaches the digital subscriber line communicating system according to claim 1, wherein said transmission side is a remote terminal and said receiving side is a central office, said remote terminal comprising: a timing signal receiving unit for receiving a timing phase (Long fig. 13: 124 is a phase compare) via received modulated symbol according to a downstream sliding window from said central office, said timing signal being synchronized with a transmission system which interferes said central office and said remote terminal (rejected under 112); said sliding window generating unit being operatively connected to said timing signal receiving unit, and said sliding window being an upstream sliding window indicating the

phase of noise condition of said central office; and a sliding window transmitting unit for transmitting modulated symbols according to said upstream (Long: both upstream and downstream do fig. 13 since both sides have the modem as shown in fig. 9) sliding window through said communication line to said central office; said upstream sliding window indicating a cross-talk duration due to said TCM ISDN transmission at said central office. (remainder discussed with respect to other claims)

22. As per claim 12, Long teaches the digital subscriber line communicating system of claim 11, wherein said upstream sliding window is generated in such a way that an inside symbol of said upstream sliding window is received by said central office in a third cross-talk duration determined with a far end cross-talk duration at said central office (Long fig 3 shows 1 near end and 1 far end cross talk. It is inherent for there to exist more than one in both upstream and downstream directions).

23. As per claim 13, Long teaches the digital subscriber line communicating system according to claim 12, wherein a fourth cross-talk duration determined with a near end cross-talk duration at the central office is within a prior half of each cycle of said timing signal, and said third cross-talk duration is within a latter half of each of said timing signal, inside of said upstream sliding window being formed within said third cross-talk duration (Long reasoning shown in response to applicant's claims 7 and 12 apply).

24. As per claim 15, Long teaches the digital subscriber line communicating system according to claim 1, wherein, during training between said transmitting side and said receiving side, a training sequence switching symbol is transmitted from the transmitting side in such a way that the receiving side receives the head of said training sequence switching symbol during a

far end cross-talk duration (Long fig. 13: symbol will be received whether in first or nth crosstalk duration).

25. As per claim 23, Long teaches a transceiver in a central office connected through a communication line to a remote terminal, said transceiver comprising: a timing signal generating unit for generating said timing signal representing a periodical noise duration; a sliding window generating unit, operatively connected to said timing signal generating unit, for generating a downstream sliding window indicating the phase of noise condition of said remote terminal; and a sliding window transmitting unit for transmitting modulated symbols according to said downstream sliding window through said communication line to said remote terminal (discussed above with Long).

26. As per claim 24, Long teaches the transceiver according to claim 23, wherein said periodical noise duration is caused with a cross-talk noise on said communication line from an another transmission system using time compression modulation (discussed above with Long).

27. As per claim 25, Long teaches the transceiver according to claim 23, wherein said downstream sliding window is generated in such a way that an inside symbol of said downstream sliding window is received by said remote terminal in a far end cross talk duration at said remote terminal (discussed above with Long) i.e., R-FEXT duration (rejected with 112).

28. As per claim 26, Long teaches the transceiver according to claim 25, wherein said first cross-talk duration is within a prior half of each cycle of said timing signal, and a second cross-talk duration determined with a near end cross-talk duration at the remote terminal is within a latter half of each cycle of said timing signal, inside of said downstream sliding window being formed within said first cross-talk duration (discussed above with Long).

29. As per claim 28, Long teaches the transceiver according to claim 25, wherein when the first modulated symbol is synchronized with the head of one cycle of said timing signal, said central office comprises a duration discriminating unit for discriminating whether N-th modulated symbol belongs to inside or outside of said downstream sliding window (discussed above).

30. As per claim 29, Long teaches a transceiver in a remote terminal connected through a communication line to a central office, said transceiver comprising: a timing signal receiving unit for receiving a timing phase via received modulated symbol according to a downstream sliding window from said central office, said timing signal being synchronized with a transmission system using time compression modulation which interferes said central office and said remote terminal; a sliding window generating unit, operatively connected to said timing signal receiving unit, for generating an upstream sliding window indicating the phase of noise condition of said central office; and a sliding window transmitting unit for transmitting modulated symbols according to said upstream sliding window through said communication line to said central office; said upstream sliding window indicating cross-talk duration due to said TCM ISDN transmission at said central office (discussed above with Long).

31. As per claim 30, Long teaches the transceiver according to claim 29, wherein said upstream sliding window is generated in such a way that inside symbol of said upstream sliding window is received by said central office in a far end cross-talk duration at said central office (discussed above) i.e., C-FEXT duration (rejected with 112).

32. As per claim 31, Long teaches the transceiver according to claim 30, wherein a near end cross-talk duration at the central office, i.e., C-NEXT duration (rejected with 112), is within a

prior half of each cycle of said timing signal, and said third cross-talk duration is within a latter half of each of said timing signal, inside of said upstream sliding window being formed within said third cross-talk duration (discussed above).

33. As per claim 32, Long teaches the transceiver according to claim 30, wherein when the first modulated symbol is synchronized with the head of one cycle of said timing signal, said remote terminal comprises a duration discriminating unit for discriminating whether N-th modulated symbol belongs to inside or outside of said upstream sliding window (discussed above).

Claim Rejections - 35 USC § 103

34. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

35. Claims 16, 17, 18, 20, 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Long in view of Chun USPN 6307889.

36. As per claim 16, Long teaches the digital subscriber line communicating system according to claim 1 wherein the number of bits to be transmitted (Long col. 12 line 33 "higher data rates") per a carrier signal corresponds to a signal to noise ratio (Long col. 11 line 38 "interference measurement", line 56 "measuring the crosstalk") for said carrier signal. What Long does not show is that only the modulated symbols received completely inside of a near end cross-talk duration at the receiving side are being used to measure the NEXT duration S/N, and only the inside modulated symbols of the sliding window at the receiving side are being used to

measure the FEXT duration S/N. What Chun teaches is wherein the number of bits to be transmitted per a carrier signal corresponds to a signal to noise ratio (Chun col. 9 line 65) for said carrier signal wherein only the modulated symbols received completely inside of a near end cross-talk duration at the receiving side are being used to measure the NEXT duration S/N (inherent by FEXT example), and only the inside modulated symbols of the sliding window at the receiving side are being used to measure the FEXT duration S/N (Chun col. 9 last paragraph; col. 10 tables, lines 1-53). It would have been obvious to one skilled in the art at the time of the invention to modify Long to incorporate bit allocation based on SNR where the SNR is divided into NEXT and FEXT as in Chun. One would be motivated to do so for higher throughput and efficiency.

37. As per claim 17, Long with Chun teach the digital subscriber line communicating system according to claim 16, further comprising a sliding window bitmap transmission system for transmitting data symbols only inside of said sliding window (Long discussed above) with transmitting capacity determined by the S/N measurement (Chun discussed above) in the inside of said sliding window at the receiving side.

38. As per claim 18, Long with Chun teach the digital subscriber line communicating system according to claim 17, further comprising a standard transmission system, wherein, according to said standard transmission system, data symbols are transmitted in both inside and outside of said sliding window (Long: data is transmitted when there is a phase offset and when there is not a phase offset) with transmitting capacity determined by the S/N measurement in NEXT duration at the receiving side (Chun cols. 9 and 10 discuss FEXT by example so NEXT would also apply); and wherein the system having the larger transmitting capacity is selected to perform the

communication (Long col. 11 lines 66-67 "One modem may then be chose to act as the timing master for all the others.").

39. As per claim 20, Long with Chun teach the digital subscriber line communicating system according to claim 17, wherein, according to one of said sliding window bitmap transmission system, at least a pilot tone used for synchronization of timing is transmitted outside of said sliding window (Long col. 11 last paragraph "In order to maintain correct transmit time ... silent periods can be inserted ... ").

40. As per claim 21, Long with Chun teach the digital subscriber line communicating system according claim 17, wherein, according to one of said sliding window bitmap transmission system and said modified sliding window bitmap transmission system, a first predetermined number of super frames, each of which is composed of second predetermined number of modulated symbols and a synchronizing symbol, constitute a single unit (Chun paragraph 14 " ... in the case of ADSL standard, two pairs of bits are swapped per superframe (1 superframe equals 69 DMT symbols) by the bit swapping protocol ... "), said single unit being synchronized with an integer multiple of one cycle duration of said timing signal (inherent), and one of said synchronizing symbols in said single unit, i.e., an inverse synchronizing symbol (rejected with 112), is made different from other said synchronizing symbol in order to maintain said single unit to be synchronized between said central office and said remote terminal (Chun paragraph 14: " ... in the case of ADSL standard, two pairs of bits are swapped per superframe (1 superframe equals 69 DMT symbols) by the bit swapping protocol, so the step of channel analysis and exchange is substituted within 13 superframes in total (69 times 13 makes 897 symbols). As a result, it is possible to perform the fast initialization compared with the

conventional step of channel analysis ... "), and said inverse synchronizing symbol in N-th super frame of said super frames is received in the FEXT duration at the receiving side (Chun paragraph 14 "Table 1 and Table 2 indicate that the number of bits to be swapped is large here it varies from not being FEXT to being FEXT ... ").

Allowable Subject Matter

41. Claims 8, 9, 14 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

42. Claims 22 and 27 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

43. The following is a statement of reasons for the indication of allowable subject matter:

44. The art of record does not suggest the respective claim combinations together and nor would the respective claim combinations be obvious with the following underlined portions:

45. As per claim 8, the digital subscriber line communicating system according to claim 7, wherein, during timing recover training between said central office and said remote terminal, inside symbol of said downstream sliding window is formed by a first kind of signal (Long fig. 3), and ***outside symbol of said downstream sliding window is formed by a second kind of signal (not in Long), said first kind of signal and said second kind of signal being obtained by modulating a carrier signal but being different in phase by a predetermined angle (since claimed outside symbol is not in long, this phrase is also not in Long either)***.

46. As per claim 9, the digital subscriber line communicating system according to claim 6, wherein when the first modulated symbol is synchronized with the head of one cycle of said timing signal (inherent for the symbol to be synchronized with the timing signal for it to be of any use), said central office comprises a duration discriminating unit (Long fig. 13: 122) for discriminating whether N-th modulated symbol ***belongs to inside or outside of said downstream sliding window (not in Long)***.

47. As per claim 14, the digital subscriber line communicating system according to claim 12, wherein when the first modulated symbol is synchronized with the head of one cycle of said timing signal (inherent for the symbol to be synchronized with the timing signal for it to be of any use), said remote terminal comprises a duration discriminating unit for discriminating whether N-th modulated symbol ***belongs to inside or outside of said upstream sliding window (not in Long)***.

48. As per claim 19, the digital subscriber line communicating system according to claim 16, comprising modified sliding window bitmap transmission system for transmitting data symbols in both inside and outside of said sliding window (Long: data is transmitted when there is a phase offset and when there is not a phase offset), and ***the inside data symbols are transmitted with transmitting capacity determined by the S/N measurement in the inside of said sliding window and the outside data symbols are transmitted with transmitting capacity determined by the S/N measurement in the NEXT duration at the receiving side (not in Long nor Chun)***.

49. As per claim 22, the digital subscriber line communicating system according to claim 21, wherein, said ***N-th super frame is 4-th super frame for downstream and first super frame for***

upstream, and said first predetermined number of super frames is 5, said second predetermined number of modulated symbols is 68 (not in Long nor Chun).

50. As per claim 27, the transceiver according to claim 26, wherein, during timing recover training between said central office and said remote terminal, inside symbol of said downstream sliding window is formed by a first kind of signal, and ***outside symbol of said downstream sliding window is formed by a second kind of signal, said first kind of signal and said second kind of signal being obtained by modulating a carrier signal but being different in phase by a predetermined angle (not in Long as discussed above)***.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (703) 305-0194. The examiner can normally be reached on Monday through Thursday after 8AM to after 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham can be reached on (703) 305-4378. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3800.

PK
October 15, 2002

CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600 10/16/02